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Cathode for Use With Low Density Gases

The problem:

Back bombardment of mixed oxide cathodes by positive ions in low density gas tubes causes rapid deterioration of the cathode.

The solution:

A cathode of metal mesh coated with electron emission enhancers is placed in a metal cup which has the heater wire wound around the exterior of the cup.

How it's done:

A cathode is filled with a knitted nickel or tungsten mesh which is coated with an electron emission enhancing material. The cup is filled with the mesh in any desired configuration, flush, concave, or convex. Back bombardment by ions can destroy only that portion of the coating which faces the oncoming ions. The activated surfaces on the other side of each individual wire are protected and can produce electron emission through the space charge neutralizing ion-filled regions in the interstices.

Note:

Requests for further information may be directed to:
Technology Utilization Officer
NASA Headquarters
Code KT
Washington, D.C. 20546
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Patent status:

No patent action is contemplated by NASA.

Source: Willard H. Bennett of
North Carolina State University
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